

CALIFORNIA DIVISION OF MINES AND GEOLOGY

FAULT EVALUATION REPORT FER-128

October 20, 1981

1. Name of fault

Unnamed fault along east side of Lake Berryessa.

2. Location of fault

Lake Berryessa 7.5-minute quadrangle, Napa County (figure 1).

3. Reason for evaluation

Part of 10-year fault evaluation program (Hart, 1980).

4. List of References

Bryant, W.A., 1981, Cordelia fault zone, Cordelia and Mt. George quadrangles, California: California Division of Mines and Geology, unpublished Fault Evaluation Report FER-127.

Hart, E.W., 1980, Fault rupture hazard zones in California: California Division of Mines and Geology Special Publication 42.

Helley, E.J. and Herd, D.G., 1977, Map showing faults with Quaternary displacement, northeastern San Francisco Bay region, California: U.S. Geological Survey Miscellaneous Field Studies Map MF 881, scale 1:125,000.

Herd, D.G., (in press), Map of principal late-Quaternary faults, San Francisco Bay region, California: U.S. Geological Survey Open-file Report, scale 1:250,000.

Sims, J.D., Fox, K.F., Jr., Bartow, J.A., and Helley, E.J., 1973, Preliminary geologic map of Solano County and parts of Napa, Contra Costa, Marin, and Yolo Counties, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-484, scale 1:62,500.

Sims, J.D. and Frizzell, V.A., Jr., 1976, Preliminary photo interpretation map of landslide and other surficial deposits of the Mt. Vaca, Vacaville, and parts of Courtland, Davis, Lake Berryessa, and Woodland 15-minute quadrangles, Napa and Solano Counties, California: U.S. Geological Survey Miscellaneous Field Studies Map MF-719, scale 1:62,500.

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U.S. Department of Agriculture, 1953, Aerial photos CSI 9k-100 to 106, 132 to 138, black and white, vertical, scale approximately 1:20,000.

#### 5. Review of available literature and air photo interpretation

A discontinuous zone of north and northwest-trending faults mapped by Helley and Herd (1977) is located on the east side of Lake Berryessa (figure 1, 2). The fault is unnamed, but will be informally referred to in this report as the "Lake Berryessa fault." Helley and Herd (1977) mapped the "Lake Berryessa fault" based on geomorphic features of young faulting, such as shutter ridges, alignment of notches, saddles, and closed depressions. No sense of offset is documented by Helley & Herd (1977). However, they infer that, because the "Lake Berryessa fault" is located along a northward projection of the Corelia fault zone (see Bryant, 1981) the sense of displacement is strike-slip. Also, the geomorphic features observed by Helley and Herd suggest strike-slip faulting.

Sims, et al. (1973) map unnamed Cretaceous sedimentary rocks, comprised chiefly of mudstone and shale, in the area where Helley and Herd map the "Lake Berryessa fault." Sims, et al. did not map a fault zone, but show unfaulted sedimentary rocks striking north to northwest and dipping moderately to steeply east. Quaternary deposits are sparse along the trend of the "Lake Berryessa fault" and are located primarily in Gosling Canyon where Sims and Frizzell (1976) map stream alluvium and terrace deposits. Helley and Herd (1977) map the "Lake Berryessa fault" as offsetting alluvium at locality 1 (figure 2), but the fault is not mapped as offsetting alluvium at locality 2 (figure 2).

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Herd (in press; p.c., September 1981) subsequently has remapped most of the fault zones shown on MF-881 (Helley and Herd, 1977), including the "Lake Berryessa fault", based on air photo interpretation. Herd did not observe geomorphic evidence of late-Quaternary activity along the "Lake Berryessa fault" (p.c., September 1981).

There is no geomorphic evidence of recent activity along branches of the "Lake Berryessa fault" mapped by Helley and Herd, based on brief air photo interpretation by this writer (figure 2). Many geomorphic features suggestive of faulting are obviously formed by bedding (figure 2). Although it is possible that faulting along bedding planes characterizes the "Lake Berryessa fault", the lack of offset or deflected drainages, tonal lineaments connecting saddles and notches indentified by Helley and Herd, and unfaulted Quaternary deposits strongly indicate that the "Lake Berryessa fault" is not active, and may not exist.

This writer did not observe shutter ridges or closed depressions along the trend of the fault. Most of the geomorphic features indicating bedrock faulting are equally as compatible with differential erosion along bedding. It is difficult to reproduce traces of the "Lake Berryessa fault" mapped by Helley and Herd (1977); thus, it cannot be considered to be a well-defined fault (Hart, 1980).

## 6. Conclusions

Geomorphic features permissive of Holocene-active faulting, such as tonal lineaments in alluvium or deflected drainages, were not observed by this writer along traces of the "Lake Berryessa fault" (figure 2). Closed depressions reported along the fault zone (Helley and Herd, 1977) were not observed by this writer. There is no evidence of offset Quaternary alluvium along traces of the fault, although alluvial deposits are sparse along the fault trend (figure 2).

The "Lake Berryessa fault" mapped by Helley and Herd (1977) is not a well-defined feature and may not be <sup>due to</sup> faulting. Cretaceous-age sedimentary rocks strike parallel to mapped traces of the fault. Thus, differential erosion along bedding planes, or perhaps bedrock faults, form the geomorphic features associated with the "Lake Berryessa fault."

## 7. Recommendations

Recommendations for zoning faults for special studies are based on the criteria of sufficiently active and well-defined (Hart, 1980).

Do not zone for special studies traces of the "Lake Berryessa fault" mapped by Helley and Herd (1977). These faults do not meet the criteria of sufficiently active and well-defined.

8. Report prepared by William A. Bryant, October 20, 1981.

*I concur with recommendations.  
I have checked photos and see  
no compelling evidence of either  
an active or well-defined fault.*

*EWB  
12/29/81*

*William A. Bryant*

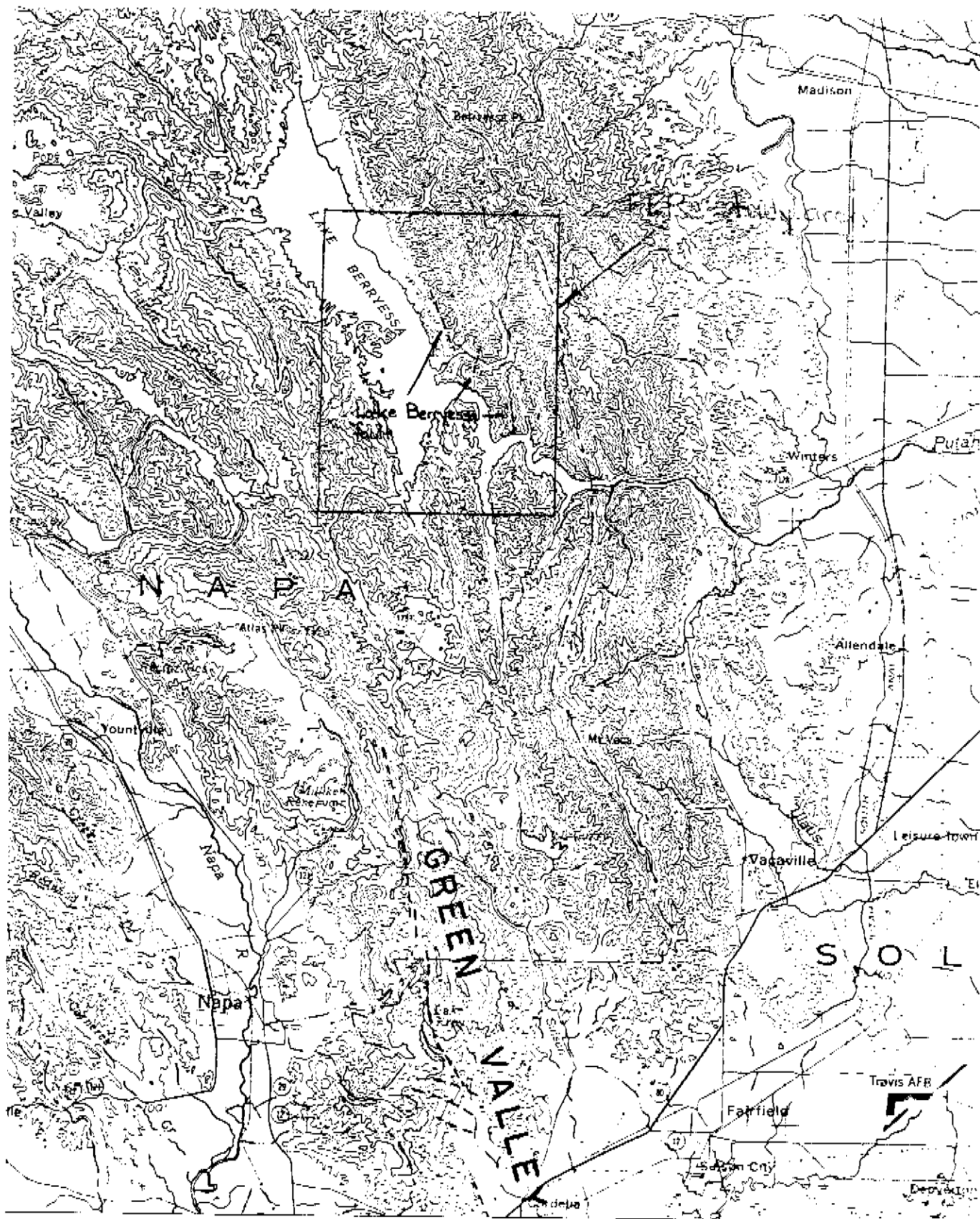


Figure 1 (to FER-128). Location of "Lake Berryessa fault" zone evaluated in FER-128.